HYBRID QUANTUM SYSTEMS:

NEW PERSPECTIVES ON QUANTUM STATE CONTROL

Ruperto-Carola-Symposium, 12 – 15 May 2010, IWH Heidelberg

Wednesday 12/5/2010	
	arrival and registration
12:30	*lunch at IWH*
13:30 – 14:00	***Welcome*** by Dr. Hengstberger and Prof. Klevansky (HGSFP)
14:00 – 15:00	C. Strunk: Carbon nanotubes as a versatile basis for quantum electronics
15:00 – 15:30	E. Weig: Gradient force transduction and self-oscillation of nanomechanical resonators
15:30 – 16:00	P. Treutlein: Ultracold atoms coupled to micro- and nanomechanical oscillators
16:00 – 16:30	*coffee break (with cake) and informal discussions*
16:30 – 17:00	M. Weitz: Laser cooling by collisional redistribution of radiation
17:00 – 17:30	R. Walser: Collisional cooling of a carbon nanon tube
17:45 – 18:30	**AMQ-Kolloquium** - J. Fortagh: Cold atoms near superconductors and carbon nanotubes
19:00 - 21:00	***Welcome buffet*** *at IWH*
Thursday 13/5/2010 (public holiday in Germany)	
09:00 – 10:00	F. Marquardt: Dynamics of optomechanical arrays
10:00 – 10:30	T. Kippenberg: Cavity Optomechanics: Towards ground state cooling of mechanical oscillators
10:30 – 11:00	*coffee break and informal discussions*
11:00 – 11:30	A. Shnirman: Rabi spectroscopy of two-level systems in Josephson qubits
11:30 – 12:00	S. Kohler: Dissipative Landau-Zener tunneling
12:30	*lunch at IWH*
14:00 – 14:30	S. Rotter: Self-organized lasing modes in random lasers
14:30 – 15:00	C. Bruder: Quantum control of interacting qubits
15:00 – 15:30	J. Volz: Cavity QED on atom chips
15:30 – 16:00	A. Sinatra: Quantum control and spin squeezed states of Bose-Einstein condensates on a chip: theory and experiments
16:00 – 16:30	*coffee break (with cake) and informal discussions*
16:30 – 17:00	Ph. Bouyer: Simulating Quantum Transport in Atoms and Light
17:00 – 17:30	D. Witthaut: Optical waveguide coupled to single emitters
18:00 – 19:00	*dinner (self-organised in town)*
19:00 – 21:00	**Public lecture** by **Prof. Dr. Markus Aspelmeyer** "*Die Rätsel der Quantenphysik - Moderne Grundlagenforschung zwischen Philosophie und Technologie*" and intervention by **Prof. G. Lal Pandit** *"Quantum Technology on the Horizon: The Evolution of the Quantum Core-Context of*

	Scientific Development", Alte Aula der Universität Heidelberg
Friday 14/5/2010	
09:00 – 09:30	S. Gerlich: Decoherence - friend and foe in matter wave experiments
09:30 – 10:00	K. Hornberger: Decoherence and entanglement dynamics in molecular systems
10:00 – 10:30	M. Aspelmeyer: Quantum-Optomechanics in the strong coupling regime
10:30 – 11:00	*coffee break and informal discussions*
11:00 – 11:30	T. Pohl: Controlled manipulation of many-body states in ultracold Rydberg Gases
11:30 – 12:00	F. Mintert: Optimal control of many-body entanglement
12:30	*lunch at IWH*
14:00 – 14:30	G. Ingold: Casimir effect and quantum Brownian motion
14:30 – 15:00	D. Sexty: Critical dynamics far from equilibrium
15:00 – 15:30	G. Günter: Ultracold Rydberg Aggregates
15:30 – 16:00	H. Ritsch: Micro-mechanical oscillator ground state cooling via resonant intracavity optical gain or absorption
16:00 – 16:30	*coffee break (with cake) and informal discussions*
16:30 – 17:00	S. Knoop: Towards polaron physics in ultracold boson-fermi mixture
17:00 – 17:30	A. Lode: Mechanism of the Decay by Tunneling Dynamics in Interacting Open Ultracold Few-Boson Systems
17:30 – 18:00	M. Schröder: OCT-MCTDH: Implementation of an iterative Algorithm for Optimal Control of multi-dimensional molecular Systems
18:30 – 20:30	**Poster session** *with snacks and drinks ("Bier und Brezeln")*
Saturday 15/5/2010	
09:00 – 10:00	J. Schmiedmayer: Hybrid Quantum Systems
10:00 – 10:30	S. Jochim: Experiments with a three-component Fermi gas
10:30 – 11:00	*coffee break and informal discussions*
11:00 – 11:30	A. Daley: An atomic colour superfluid via three-body loss
11:30 – 12:00	S. Flörchinger: Ultracold fermions with three components: Cooper pairs, molecules and trions
12:00 – 12:30	T. Emig: Casimir Effects
12:30 – 13:00	P. Schlagheck: Transport and interaction blockade of ultracold bosonic atoms in triple-well systems
13:00 – 14:00	***departure*** *and/or lunch (self-organised in town)*
14:15 – 15:30	*guided city tour for interested participants*

Poster session:

1) Mathias Albert: Single electron source: universal noise and full counting statistics

2) Stephan Camerer: Coupling of ultracold atoms and a mechanical oscillator via an optical lattice

3) Maarten DeKieviet: Massive Entanglement and Non-Contextuality: an Atomic Beam Spin Echo Experiment

4) Boris Fine: An alternative to the conventional micro-canonical ensemble

5) Thomas Gasenzer: Nonequilibrium Kondo lattice dynamics with alkaline-earth atoms

6) Christoph Husemann: Ferromagnetism and Superconductivity in the 2D Hubbard Model

7) Florian Lenz: Classical chaotic dynamics of high-finesse micromechanical optical cavities

8) Michael Lubasch: Dynamics of 1D fermionic systems via Matrix Product States

9) Javier Madroñero: Interaction of ultracold atoms with walls and nanostructures

10) Michael Mayle: Employing Rydberg Atoms for Manipulating the Trapping Potentials of Ultracold Ground State Atoms

11) Carlos Parra: Floquet-Lanczos diagonalization of two-band Bose-Hubbard models

12) Patrick Plötz: Collapse and revivals in many-body interband oscillations of a Wannier Stark system

13) Henning Soller: Transport properties of normal-quantum dot-superconductor hybrid structures

14) Ghazal Tayebirad: Landau-Zener tunneling in the Wannier-Stark system

15) Andrea Tomadin: Dynamical phase transitions in dissipatively driven atomic many-body systems